# American Society for Testing Materials BULLETIN

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BI MONTHLY

A Second Review 42,73

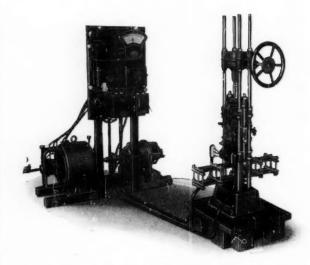
THE REVIEW of the Society's activities during 1926 published in the BULLETIN a year ago proved so helpful in obtaining a general perspective of the Society's work, that a second review is presented herewith covering the activities of 1927. A stock-taking is essential in every enterprise, in a technical Society such as ours no less than in industry itself, for such examination should point the way to greater accomplishment in the future. The present review is intended to serve the purpose of such stock-taking, and to serve as an incentive for equal and greater service in subsequent years.

January, 1928

ENGINEERS' CLUB BUILDING 1315 SPRUCE ST., PHILADELPHIA

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# American Society for Testing Materials



# BULLETIN

ENGINEERS' CLUB BUILDING

1315 SPRUCE STREET

PHILADELPHIA, PENNA.

NUMBER 30

January 16, 1928

#### The Society During 1927

STANDARDIZATION and research—research in and the promotion of knowledge of engineering materials and the standardization of materials specifications and methods of testing. These are the two purposes for which the Society was organized, and the work of the Society during the past year represents considerable progress in each. Standardization was probably the more prominent in view of the appearance of the Book of Standards during the year. The 1927 edition of this triennial publication was issued in two parts, Part I on Metals containing 144 specifications, methods of test, etc., relating to metallic materials, and Part II on Non-Metallic Materials containing 196 specifications, methods of test, etc., covering non-metals. Not only were a number of tentative standards that had been issued as tentative during the past few years advanced to standard but a number of revisions were made in existing standards in order to have the specifications and methods appearing in the Book of Standards represent the latest thoughts on the subjects covered. As a result of the intensive standardization work the Society now has 515 standard and tentative specifications, methods of test and definitions of terms. The magnitude of this standardization work is appreciated when compared with the 164 in existence ten years ago or even with the 447 in existence only a year ago.

Of possibly more importance is the greater extent to which the standards are being used. As the field of materials is more completely covered all of the standards find more general application. As has been mentioned in the Bulletin from time to time large organizations are utilizing our standards directly or are preparing specifications based upon A.S.T.M. standards. Municipal and other governmental bureaus and departments find considerable use for our standards. Likewise they are being written into building and other Those codes written or revised during the past year especially contain frequent reference to A.S.T.M. standards. It is but natural at such times as the present, when every effort must be made in industry to effect greater and ever greater economies, that accepted standards such as those of the A.S.T.M. should be employed to take up some of the slack resulting when no attempt is made at uniformity. It is accordingly gratifying to note the place A.S.T.M. standards are taking in the general economic scheme of industry.

The increasing use of our standards is reflected in the

wide-spread recognition the Society is receiving, both through increased membership and in the extent to which the Society is looked upon as an authority in questions relating to materials. The present membership is 4220, distributed throughout the world. The membership in foreign countries has continued to increase so that at the present time the membership in various countries numbers close to 500 with 38 countries represented.

Many organizations carry out their standardization work in cooperation with the Society. During the past years there has been a marked increase in the number of industrial and trade associations that have been formed in various industries. These have had a noticeable effect upon the committee work of the Society in that they serve to concentrate the thought of the industries on a given problem, to stimulate investigations on properties of materials, and to bring about more readily a concensus of opinion on technical matters. As mentioned in the annual report of the Executive Committee, 67 technical, industrial and trade associations hold membership in the Society and that 55 are represented either directly or indirectly upon its committees. These figures are significant as illustrating the extent of the cooperative relations that have been established between the Society and the various industries.

#### Research

But with all the emphasis that has been placed upon standardization there has been no diminution in the efforts of the Society to bring out new knowledge on the properties of metals. In fact, the standardization work itself is productive of many investigations to settle moot questions or to bring out sufficient data to warrant the preparation of specifications or standard test procedures. An outstanding contribution to the knowledge of materials during the past year has been the Edgar Marburg Lecture presented at the 1927 annual meeting by Dr. George L. Clark. This lecture was a masterful presentation of the developments that have taken place in the use of the X-ray as applied to industrial problems and brought out many ways in which the X-ray has been or can be used. Such applications, while originally confined to the testing of metals, as for instance the radiographic testing of castings, now take in any number of other materials such as the textiles, rubber, and timber.

The Charles B. Dudley Medal was inaugurated for the express purpose of recognizing the presentation before the Society of meritorious contributions on original research in

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engineering materials. The first award of this medal was made in 1927 to Dr. D. J. McAdam, Jr., for his paper "Stress-Strain-Cycle Relationship and Corrosion-Fatigue of Metals" presented at the 1926 annual meeting. Research is likewise being fostered by the Society's Committee on Correlation of Research resulting in the organization of special research committees, as for example the Research Committee on Yield Point of Structural Steel, which committee presented a progress report during the year. As indicated in this report, the committee has outlined a second series of tests, to ascertain the effect of speed of loading on the yield points of specimens cut from various portions of structural shapes.

#### Effect of Temperature

The Joint A.S.M.E.-A.S.T.M. Research Committee on Effect of Temperature on the Properties of Metals has made considerable progress in its study of the subject during the An adequate bibliography is being prepared. A number of laboratories are cooperating in carrying out tests for the committee, some of the results of these tests having been presented in reports on comparative high-temperature tension tests on a carbon steel and on a chromium-molybdenum steel at different laboratories and on thermal expansion of materials. A number of technical papers have been presented in the past covering the effect of temperature on metals and a similar paper was presented this year by R. S. MacPherran entitled "Some Tests of a Chrome-Nickel Steel at High Temperatures" which was a continuation of a paper presented by Mr. MacPherran some few years ago. Society's Committee A-1 on Steel is interested in the preparation of specifications for various metals for use at high temperatures and four such specifications have already been submitted, namely, specifications for carbon-steel castings for valves, flanges and fittings, for alloy-steel bolting material, for forged or rolled steel pipe flanges, and for lap-welded and seamless steel pipe. Revisions of the last two specifications were submitted this year and it is expected that further recommendations in reference to specifications for hightemperature materials will be presented in subsequent reports of the committee.

#### Corrosion and Corrosion-Fatigue

Corrosion and corrosion resistance are such important factors in industry as to warrant the expenditure of considerable time in their study. During the past year the effects of combined corrosion and fatigue have been further reported upon in papers by R. R. Moore, and by D. J. McAdam, Jr., entitled, respectively, "Effect of Corrosion upon the Fatigue Resistance of Thin Duralumin," and "Corrosion-Fatigue of Non-Ferrous Metals." Another phase of corrosion was discussed in a paper by S. W. Parr and F. G. Straub entitled "Embrittlement of Boiler Plate." This paper presented results of the continuation of the investigation described in a paper presented the year before

a paper presented the year before.

Several committees have continued their investigations on corrosion and corrosion resistance such as the program of Committee B-3 on Corrosion of Non-Ferrous Metals and Alloys to develop, if possible, a standard test for corrosion resistance. During the past year the committee has followed two rather definite lines. The data resulting from the accelerated tests carried out during the past few years have been summarized and the tests originally being studied revised in the light of these results. Three new sub-committees have been formed to carry out long-time service tests on a large number of metals and alloys in the atmosphere, in liquids, and under conditions which emphasize galvanic and electrolytic corrosion.

The test program of Committee D-14 on Screen Wire Cloth in which cloth of seven compositions are being exposed to the atmosphere at the Bureau of Mines, Pittsburgh, Pa., U. S. Bureau of Standards, Washington, D. C., Bureau of Lighthouses, Portsmouth, Va., and the Panama Canal, Canal

Zone, is being continued but no failures have been reported to date. Committee A-5 on Corrosion of Iron and Steel is continuing its investigations on service tests. Probably the most ambitious program attempted by the committee is the one initiated a year ago in which zinc-coated articles are, being exposed at five locations: at Pittsburgh, Pa., Altoona, Pa., Pennsylvania State College, Sandy Hook, N. J., and at Key West, Fla. Much of the material has now been installed. These field tests amplify the investigations of the committee on atmospheric exposure tests of black sheets, both copper bearing and non-copper bearing, and on total immersion tests of this material.

A new sub-committee on metal culvert corrosion tests has been organized and its work is well under way. An inquiry showed that very few highway departments or railroads have made any field studies of the metal culvert from the standpoint of material but much interest was shown in the possibility of a comprehensive study of this subject.

That some phases of the problem of corrosion resistance have reached the standardization stage is seen from the standardization activities of Committee A-5. On the recommendation of this committee three tentative specifications for zinc-coated wire, submitted a year ago, were redrafted and three new specifications covering zinc-coated fencing were submitted, resulting in the following group of tentative standards: Tentative Specifications for Zinc-Coated Iron or Steel Telephone and Telegraph Line Wire, for Zinc-Coated Iron or Steel Tie Wires, for Zinc-Coated Wire Fencing, for Zinc-Coated Chain-Link Fence Fabric Galvanized After Weaving, for Zinc-Coated Chain-Link Fence Fabric Galvanized Before Weaving, and Methods of Testing Zinc-Coated Iron and Steel Wire and Wire Products. Specifications for Hot-Dipped Galvanized Sheets submitted as tentative several years ago were suitably revised and advanced to standard.

In the Sectional Committee on Specifications for Zinc Coating of Iron and Steel much has been accomplished in the general subject of accelerated weathering tests and on physical tests of galvanized materials. The sectional committee has found it necessary to do a great deal of clearing work before it could successfully undertake the writing of specifications.

#### Magnetic Analysis and Testing

The field of non-destructive testing by magnetic analysis covers a wide variety of possible applications. Committee A-8 on Magnetic Analysis is sponsoring an extensive investigation on high-speed steels. Very complete magnetic data of various kinds have been obtained on a series of samples which vary as to heat treatment. A large number of samples which vary as to heat treatment. A large number of samples have also been examined by X-ray methods and the results reported at the annual meeting. Arrangements are now being made for service tests on a set of drills for which magnetic data were obtained some time ago.

Apparatus was described at the annual meeting for examining magnetically small areas of steel objects, in a paper by J. A. Sams, on the duroscope, and for making rapid tests of objects of various sizes and shapes using an alternating current oscillograph in papers by A. V. de Forest and Thomas Spooner. Apparatus was also described in a paper by J. A. Capp which is in regular use for the inspection of steam turbine bucket wheels.

Committee A-6 on Magnetic Properties has revised the Standard Methods of Test for Magnetic Properties of Iron and Steel. New methods have been proposed to cover tests of magnetic properties at low inductions for audio and power frequencies. These new methods are intended primarily to meet the needs created by the advances in the radio art.

A list of proposed symbols and definitions of magnetic terms were submitted by the committee at the annual meeting. Other magnetic terms have since been defined and suitable symbols proposed.

(Continued on page 6)

# Notes on Cooperative Work with A. E. S. C. Copper Wire Standards

The Society has now submitted to the American Engineering Standards Committee for approval as American Standard its Specifications for Soft or Annealed Copper Wire in the form as revised in 1927 and its Specifications for Tinned Soft or Annealed Copper Wire for Rubber Insulation. Action looking to such approval by the A.E.S.C. had been deferred pending embodiment of these specifications in the Specifications for Insulated Wire and Cable by a general sectional committee on that subject. Such embodiment has officially been accomplished and the way therefore cleared for approval of the two specifications as American Standard under the sponsorship of the Society. Committee B-1 on Copper Wire is the sectional committee under whose recommendation this action is being taken.

#### Project on Numbering of Steels Discontinued

The A.E.S.C. has taken favorable action upon the recommendations of the Society to Automotive Engineers and the A.S.T.M. that these societies be relieved of the responsibility for development of a universal numbering system for steels. This action was taken after the sectional committee that had been organized to develop such a system had reached the conclusion that such a system, based on definite specifications, is impracticable and that the effort to establish such a system was inexpedient.

As a result of this action by the A.E.S.C. the sectional committee on the subject has been disbanded and all work on it by the two sponsors discontinued.

#### Standards for Special Track Work Material

The work of the past few years of the Sectional Committee on Specifications for Special Track Work Materials has now been virtually completed and the committee is prepared to report on specifications for these materials. The Society has been represented on this committee by E. F. Kenney with F. N. Speller as alternate. Wherever possible, existing standards were incorporated in the specifications. In this way reference has been made to a number of the Society's specifications for rails and for rail accessories, such as tie plates, splice bars, track bolts, and for gray iron castings and commercial bar steels, etc. This policy of utilizing existing specifications wherever possible is a commendable one in the interest of simplification and the Society may feel gratified that its own specifications have been used to such a considerable extent.

#### Sub-Committee on Die Casting Alloys

Mention has been made in the BULLETIN from time to time of the important work of a newly-organized Sub-Committee on Die Casting Alloys of Committee B-2 on Non-Ferrous Metals and Alloys. The personnel of this sub-committee was incompletely recorded in the 1927 Year Book and is as follows:

Anderson, H. A. (Chairman)
Brophy, G. R.
Burgess, G. K.
Colwell, D. L.
Cowan, W. A.
Faragher, P. V.
Hall, A. J.
Johnson, J. B.
Johnston, R. L.
Jones, J. L.

McAdam, D. J. Newton, N. E. Pannell, E. V. Pierce, W. M. Scheuch, W. A. Simpson, C. W. Strauss, Jerome Templin, R. L. Tour, Sam Townsend, J. R.

## International Standards for Testing Insulating Oils

Substantial progress has been made during 1927 toward international agreement on standard tests for electrical insulating oils. Several years ago there was expressed a desire for a universally acceptable method for testing insulating oils to determine their tendency to form sludge. The United States Committee of the International Electrotechnical Commission referred the problem to our Society, and E. A. Snyder, chairman of the Sub-Committee on Liquid Insulation, of Committee D-9 on Electrical Insulating Materials, was appointed a member of the U.S. National Committee and put in charge of studies of electrical insulating oils for the National Committee. A Committee of Advisors was formed upon which are represented all the leading manufacturers and users of electrical apparatus and all the leading refineries engaged in the manufacture of insulating oil. It was of course inevitable that this committee would be largely composed of men who are also members of the A.S.T.M. This committee early in its deliberations decided that it would be distinctly advantageous to have uniformity of procedure in the testing of insulating oils for the ordinary physical tests as well as for the sludging tendencies.

An attempt to compromise on a universal method was made and actual standardization has been accomplished in certain test methods. It is extremely gratifying to our Society to see that where such agreement has been accomplished, it has resulted in adopting, almost verbatim, the A.S.T.M. method. Not only does this indicate the interest on the part of American delegates to the I.E.C. meetings, but it also speaks volumes for the thoroughness with which our American engineers and chemists have studied this subject before produc-

ing an A.S.T.M. standard method.

To date the I.E.C. has standardized the Pensky-Martens Closed Cup Flash Point Test as set forth in our Standard D 93 – 22. The method for sampling proposed at the last meeting of the I.E.C. in Italy is almost the same as that appearing in our Method D 117 – 27, a few minor changes having been made in order to make it applicable to European practice. While these are the only standards so far definitely adopted, the Commission is favorably inclined to the A.S.T.M. methods of test for pour point, neutralization number, and mineral acid. In the matter of viscosity tests, agreement was reached to refer to viscosity values in terms of absolute viscosity. It is, of course, obvious that such a procedure is much more desirable than to refer to viscosity in terms of any of the many forms of viscosimeters in use in various countries.

Much research work on sludging properties of oils has been accomplished. It is probably safe to say that as the result of the I.E.C. cooperative work, this question of sludging has been studied both here and abroad a great deal more than it normally would have been. Furthermore, the results of this research work have been circulated in this country and abroad and this interchange of ideas will no doubt ultimately result in a more uniform opinion as to the cause for the sludging of oils. The study has already fairly definitely developed the idea that due to a difference in design of electrical apparatus, oils of different character are demanded and therefore probably several types of sludging tests may be required.

While international standardization is necessarily slow, it is significant and encouraging to see that it is surely progressing in this field and that our Society is playing an important rôle.

#### AMERICAN SOCIETY FOR TESTING MATERIALS

#### BULLETIN

Issued Bi-Monthly

Engineers' Club Building, 1315 Spruce St., Philadelphia, Pa.

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Number 30

January 16, 1928

#### A Second Review Number

THIS issue of the BULLETIN continues the policy established a year ago of setting forth a review of Society activities during the year just ended. We believe that the account of the outstanding features of the Society year will be as inspiring to the Society members as it has been to those of our staff who have prepared it and it is both an incentive and a challenge to us all to make 1928 show fully

as much progress.

In connection with this review, certain phases of the Society's growth that have been embodied in the Secretary-Treasurer's report to the Executive Committee on membership, publications and finances may be of interest. The basis of comparison in this report is 1916, which was selected because it is the year in which the annual dues were raised to \$15.00 and happens also to be the last year in which normal "prewar" costs obtained in publication work. In the eleven years between 1916 and 1927 the Society membership has grown from 2128 to 4220, an increase of practically 100 per cent. In the same period, however, our standardization activities. measured by the number of standards and tentative standards and the number of pages, have increased nearly 300 per cent—a very significant indication of the extent to which standards and tests for materials have become a necessary part of our industrial and economic structure. The Book of Standards in these eleven years has practically tripled in The annual Proceedings have grown in that period from around 1100 pages to an average of 1800 pages. has been an ever-increasing demand for special publications, such as reprints of important reports and the publication in pamphlet form of groups of specifications; so that the number of pages of printed matter that the Society now publishes annually is more than twice that of a decade ago.

All this growth has its reflex in the financial history of the Society. In 1927 we had for the first time a budget over \$100,000. Whereas annual receipts from dues have doubled since 1916, receipts from sales of publications have increased sevenfold—again an evidence of the value of our work to

the industries of the country. Total receipts now are about three times those of 1916. The cost of administering Society activities has, of course, grown with the expansion of our activities. In 1916 the mechanical cost of our publications, which that year included the then bi-ennial Book of Standards, was about \$16,000. In 1927, which also included the Book of Standards, the publications cost \$68,000, approximately four times as much. It must be remembered, of course, that some of the increased printing bill is due to increased unit printing costs and to our special publications, specification reprinting, Bulletin and other activities that have expanded enormously in the past ten years. But this expansion of our publication activities, which constitutes one of the most important contributions of the Society to its members and to the public at large, has largely paid its way in increased receipts from publication sales.

A review of industrial developments in this ten-year period brings into bold relief the increased realization by industry of the importance of the standardization movements and of the necessity for keeping abreast of progress in the field of materials. The effect of this is clearly seen in the acceleration of standardization work in the Society and in the increased interest in and support of the many investigations that are being carried on by our committees to extend our knowledge of materials. The Society has truly set a high standard of accomplishment. It will, we are sure, be the object of all our members, officers and committees to strive to maintain the confidence that industry, government and technology has in the integrity of the Society's work and the value of its endeavors in the field of engineering materials.

#### 1928 Annual Meeting at Atlantic City

The members have no doubt noted on their calendars the dates for the 1928 annual meeting which, as announced in the November Bulletin, are June 25 to 29. The meeting will be held at the Chalfonte-Haddon Hall, Atlantic City, where we have in the past held such successful meetings.

The next issue of the Bulletin, which will appear early in March, will contain an announcement of hotel rates and details of a plan being worked out by the hotel management that is expected to greatly facilitate the making of reservations and the registration of our members.

The Provisional Program of the meeting will, as in the past, be sent to the members about the end of April.

#### Papers of 1928 Annual Meeting

Members are reminded of the invitation to submit offers for technical papers for presentation at the 1928 annual meeting. This invitation was extended to the members in a circular sent out January 2. All offers accompanied by a summary and received not later than February 23 will be considered by the Committee on Papers and Publications, but consideration of offers received after that date is entirely contingent upon the condition of the Provisional Program when the offer is received.

#### International Congress Papers

Considerable interest has been expressed in the papers presented at the International Congress for Testing Materials as listed and briefly abstracted in the November issue of the Bulletin. As announced at that time, the papers will be issued in book form, the price being 34 guilders per copy. Orders for the Proceedings of the Congress and any inquiries concerning separate reprints of the papers should be addressed to The Secretariaat, Valckenierstraat 2, Amsterdam.

#### Schedule of Committee Meetings

DATE	COMMITTEE	PLACE
January	D-8 on Waterproofin	ng
	Materials	New York City
January 18	D-16 on Slate	New York City
January 26-28	D-2 on Petroleum Pro-	d-
	ucts and Lubricant	sBaltimore, Md.
January 26-27	D-9 on Insulating Mat	e-
	rials	New York City
February	B-4 on Materials fe	or
	Electrical Heating	Philadelphia
February 27	Sectional Committee of	on
	Testing Road Mat	e-
	rials	Philadelphia
March	D-2 on Petroleum Pro	
		sCleveland, Ohio
March 2	C-9 on Concrete and Co	
	crete Aggregates	Philadelphia
March 20-23	GROUP COMMITTE	
		Washington, D. C.
March 28	Sectional Committee of	
	Classification of Co	al. New York City

#### Group Meeting in Washington in March

In the November issue of the Bulletin mention was made of plans for holding the usual spring group meeting of committees, Washington having been one of the cities suggested. This city appears to meet with the general approval of the committees and accordingly more definite plans will now be developed for the meeting.

The dates Tuesday, March 20, to Friday, March 23, have been suggested. By beginning the meetings on Tuesday it will be possible to schedule meetings of the metals and non-metals committees during the same week, a plan that has worked out very successfully during the past few years in the meetings at Cleveland, Providence and Philadelphia.

#### 1927 Proceedings

The Proceedings of the 1927 annual meeting are off press and are now being distributed. The two volumes, Part I containing committee reports and tentative standards, and Part II containing technical papers, will together comprise 1706 pages.

Attention is particularly called to the many discussions appearing in Part II. While practically all the reports and papers were preprinted in advance of the annual meeting so that members have had an opportunity to receive these in separate pamphlet form, the discussions did not appear before their publication in the Proceedings. Those members who attended the annual meeting had an opportunity to listen to the discussion presented but even they will be interested in having the discussion available in printed form and to have available the many discussions that have been submitted by letter subsequent to the annual meeting. Members will find this discussion of considerable value.

#### Conference on Slate, Cement and Steel

Arrangements are now being made through the efforts of Committee D-16 on Slate for a three-day conference on slate, cement and steel to be held during April in the Lehigh district of Pennsylvania. This conference will be attended not only by the civic organization groups and citizens of that district but architects, engineers, draftsmen, builders and others interested in construction in surrounding districts, all of whom have been invited to participate. The program as tentatively outlined will include in addition to the spring meeting of Committee D-16 to be held at Lafayette College, Easton, Pa., visits to quarries, mills and plants connected with the slate, cement and steel industries with meetings, papers and discussions relating to each subject.

#### Fire Tests of Combustible Materials

Acting upon a recommendation made at the annual meeting that consideration be given to the desirability of formulating standard fire tests for combustible materials the Executive Committee of the Society decided that this problem merited consideration, assigning it to Committee C-5 on Fire Tests of Materials and Construction. This committee met in New York City on December 19 and decided for the present to limit its study of this subject to tests of lumber.

Upon recommendation of the committee the following members were added to its personnel in order to bring to the assistance of the committee Society members who have given the subject of fire tests of lumber considerable study:

Hermann von Schrenk, Consulting Timber Engineer, St. Louis, Mo., who will also represent the interests of Committee D-7 on Timber in this work;

M. E. Dunlap, Engineer of Forest Products, U. S. Forest Products Laboratory, Madison, Wis.; and

The National Lumber Manufacturers Association, represented by F. P. Cartwright, Chief Engineer, Washington, D. C.

At this meeting the committee appointed a sub-committee consisting of F. P. Cartwright, Chairman, M. E. Dunlap, S. H. Ingberg, G. E. Strehan, Fitzhugh Taylor, Hermann von Schrenk, charged to study the effects on lumber of exposure to heat to determine what, if any, change in ignition point is effected by various treatments; whether and how much retardation is effected in the combustibility of material and whether there is any diminution and to what extent in the spread of fire; and to report a suggested standard fire test for treated lumber.

In discussing the work of the sub-committee it was felt that its investigation should include methods that involved impregnation, surface application or any other method of rendering the lumber fire-resistant. It was also felt that the fire tests to be developed should apply to materials entering into the finishing of a building and not to those elements of a building on which the stability of such building is dependent, it being considered that the present Tentative American Standard Specifications for Fire Tests of Materials and Construction are applicable for fire tests in the latter case. The sub-committee was authorized to look into the question of permanence of fire-retardent treatments.

#### Henry V. Wille

1869-1927

It is with keen regret that we record the death, on November 29, of Henry V. Wille, long a member of the Society. At the time of his death, Mr. Wille was Consulting Vice-President Concerning Engineering and Metallurgy of the Baldwin Locomotive Works and the Standard Steel Works Co. He had been associated with the Baldwin Locomotive Works since 1893, a year after his graduation from the Engineering School of Cornell University.

He had been a member of the Society since 1898, and was accordingly one of the honor 25-year members at the Twenty-fifth Anniversary meeting last June. He took an active part on the Society's Committees on Steel, on Wrought Iron and on Cast Iron and was the author of a number of technical papers presented before the Society dealing principally with staybolt material, and on the heat treatment of steel. He was for many years the chairman of the Steel Committee's Sub-Committee on Tubing and Pipe and was ever an able and willing toiler in the committee's activities.

#### New Members to January 12, 1928

The following 50 members were elected from November 28, 1927, to January 10, 1928, making the total membership 4265.

1927, to January 10, 1928, making the total membership 4265.

Abson, Gene (Chicago Paving Laboratory).

Austin, C. F. (Commonwealth-Edison Co.).

Baash-Ross Tool Co., H. P. Wickersham.

Bassett, W. H. (American Brass Co.).

Bayless, O. A. (Oklahoma Portland Cement Co.).

Beard, L. C., Jr. (Studard Oil Co. of New York).

Bendixen, Harold (Bettendorf Co.).

Cary-Curr, H. J. (E. H. Sargent & Co.).

Clarvoe, George W., Jr. (U. S. Bureau of Standards).

Cleland, William (The Sheffield Testing Works, Ltd.).

Condit Electrical Manufacturing Co., G. E. Jansson.

Consett Iron Co., Ltd., W. Firth.

Cook, R. C. (University of Cincinnati).

Davidson, E. H. (Illinois Steel Co.).

Debevoise Co., The, W. L. Hale.

Doeleman, H. F. (Consulting Engineer).

Duffield, C. A. (Harrison Radiator Corp.).

Edwards, J. H. (American Bridge Co.).

Forman, C. L. (Buick Motor Co.).

Formica Insulation Co., The, J. C. Pitzer.

Francis, C. B. (Carnegie Steel Co.).

General Plastics, Inc., H. M. Dent.

Greensted, H. B. (Algoma Steel Co.).

Gruber, J. F. (North American Cement Corp.).

Gustafson, G. F. (R. E. Pingrey and Co.).

Hackett, H. C. (National Vulcanized Fibre Co.).

Hackett, H. C. (National Vulcanized Fibre Co.).

Konstantinowsky, Kurt (Cable Mfg. Co., Bratislava, Czechoslovakia).

Koontz, J. A. (Great Western Power Co.).

Marsh, H. F. (Consolidated Materials Corp.). Monstantinowsky, Kurt (Cable Mig. Co., Blausiava, Czechoslovasia).
Koontz, J. A. (Great Western Power Co.).
Marsh, H. F. (Consolidated Materials Corp.).
Mason, H. M. (City of Portland Water Bureau).
Mexico National School of Engineering, Strength of Materials Labo-Mexico National School of Engineering, Strength of Materials Laboratory, G. Aguilar Alvarez.
Molinari, Henry (Societa Italiana Bakelite).
New York Trap Rock Corp., C. W. Tisdale.
Ohio State Foundrymen's Association, A. J. Tuscany.
Packard, Theodore (Student Member, Mass. Institute of Technology).
Pickhardt, W. P. (Kuttroff, Pickhardt & Co., Inc.).
Postal Telegraph-Cable Co., J. F. Skirrow.
Powel, G. W. (American Mond Nickel Co.).
Roberts-Lewis, Gwyn (C. D. Howe & Co.).
Robinson, W. W. (The Cleveland Trinidad Paving Co.).
Russell, Burdsall and Ward Bolt and Nut Co., H. C. Rigney.
Scott, A. W. (Empire Oil Works, Inc.).
Seuffert, E. M. (Federated Metals Corp.).
Stauch, Adolf (Siemens-Schuckertwerke, A. G.).
Weigele, T. W. (Detroit City Gas Co.).
Welter, Gustave (The Bigelow Co.).
Wettstein, T. F. (United Lead Co.).
Wilson, J. M. (Bell Telephone Laboratories, Inc.).

#### **Deceased Members**

We announce with regret the death of six members:

HENRY S. ADAMS, Consulting Engineer, Arlington, Mass. James Baillie, Chief Chemist, American Lanolin Corp., Lawrence, MASS.
WILLIAM A. COOPER, Conshohocken, Pa.
John R. Mitchell, Chemical Engineer, W. H. Miner, Inc., Chicago,

HENRY S. SPACKMAN, Consulting Engineer, Ardmore, Pa.
H. V. WILLE, Vice-President, The Baldwin Locomotive Works,
Philadelphia, Pa.

#### William A. Cooper

#### 1853-1927

The death of one who had endeared himself to many of the Society's members by his sterling qualities, William A. Cooper, occurred on December 29, 1927. His death was due to Cerebral Thrombosis. He was one of the Society's most enthusiastic and tireless workers, serving on the Committee on Corrosion of Iron and Steel. He brought to his assignment of Chairman of the Sub-Committee on Total Immersion Tests a wealth of experience and he served long and well in furthering the work on corrosion of metals. Those who knew him will feel a keen sense of loss on his death.

#### The Society During 1927

(Continued from page 2)

#### Iron and Steel, General

Mention has already been made of the activities of Committee A-1 on Steel in respect to specifications for materials for use at high temperatures. While this is a very live subject in the committee, it is only one of many subjects that have received the committee's attention. Much of its standardization work during the past year has been in the revision of existing standards. In addition, new specifications have been issued covering structural steel for locomotives and cars which are intended to replace the present Standard Specifications for Structural Steel for Cars and Specifications for Structural Steel for Locomotives. New specifications were offered for alloy tool steel and for marine boiler steel plates.

Committee A-3 on Cast Iron submitted at the annual meeting a revision of its Standard Methods of Chemical Analysis of Pig and Cast Iron which revision has been adopted as standard. The committee after several years' discussion has adopted a new arbitration bar as a tentative standard. Also, some changes have been made in the tension test specimen for cast iron. The committee realizes the importance of the development of cast iron as an engineering material and is planning a program of experimental work on high-test cast iron. Research work will also be carried out on the heat treatment of cast iron, as well as in fatigue studies of iron and the impact testing of cast iron.

Some work on the fatigue of cast iron was reported during the year in a paper by H. F. Moore and S. W. Lyon entitled "Tests of the Endurance of Gray Cast Iron Under Repeated Stress." Data on high-strength cast iron was also submitted in a paper by M. E. Greenhow.

#### Non-Ferrous Metals

The work of Committee B-2 on Non-Ferrous Metals and Alloys is reflected in a number of new standards submitted. Two of these, namely, the specifications for bronze castings in the rough for locomotive wearing parts and for car and tender journal bearings replace the former Tentative Specifications for Non-Ferrous Alloys for Railway Equipment. The new specifications are in line with the corresponding specifications of the Mechanical Division of the American Railway Association. New specifications were submitted for yellow brass sand castings to round out the group of specifications issued during the past two years covering castings and The Specifications for Rolled Zinc submitted casting metal. this year contain not only specification requirements but descriptions or tests as well, peculiarly applicable to the testing of thin sheet metals, as for instance, dynamic ductility and temper tests. A further specification, covering brazing solder, was submitted.

Revisions were made in the Tentative Methods of Chemical Analysis of Aluminum and Light Aluminum Alloys and revisions were approved in the Standard Specifications for Lake and Electrolytic Copper, for Naval Brass Rods for Structural Purposes, for High Sheet Brass and in the Standard Methods of Chemical Analysis of Brass Ingots and Sand Castings and of Bronze Bearing Metal.

Committee B-2 has recognized the lack of definiteness in the description of non-ferrous metals and alloys used in trade publications in quoting market prices, and in the belief that the industry would be greatly benefited and the usefulness of the A.S.T.M. promoted, it is considering the possibility of using A.S.T.M. specifications and nomenclature in describing the metals and alloys quoted upon. committee is working with the American Marine Standards Committee to harmonize somewhat divergent views on the compression test of condenser tubes. A committee on die cast aluminum alloys is undertaking a test program covering tension, hardness and impact tests on some 70,000 specimens.

The Society's Committee B-1 on Copper Wire advanced a number of tentative revisions to standard. These for the most part involved the substitution of a density requirement for the specific gravity requirement appearing in the Standard Specifications for Hard-Drawn Copper Wire, for Medium Hard-Drawn Copper Wire, for Soft or Annealed Copper Wire, for Bare Concentric Lay Copper Cable, and for Round and Grooved Hard-Drawn Copper Trolley Wire. The committee has been cooperating during the past few years with the American Electric Railway Association in the revision of Specifications for Copper Trolley Wire and for Bronze Trolley Wire. Agreement had previously been reported in reference to the Specifications for Copper Trolley Wire and during the past year agreement was reached in respect to the Specifications for Bronze Trolley Wire.

Committee B-1 as the sectional committee functioning under the rules of procedure of the American Engineering Standards Committee is recommending for approval as American Standard the Society's Specifications for Soft or Annealed Copper Wire and for Tinned Soft or Annealed Copper Wire. Revisions have been proposed by the electric power interests in the Specifications for Hard-Drawn and Medium Hard-Drawn Copper Wire and these are still under consideration.

Committee B-4 on Metallic Materials for Electrical Heating has developed two methods of test for electrical heater wires, which were accepted by the Society as tentative: Methods of Chemical Analysis and Methods of Test for Change of Resistance with Temperature. An accelerated life test or durability test for electrical heater wires at high temperatures has been prepared and arrangements made for round robin tests by several laboratories. A method of test for uniformity of temper of wire has been outlined. A study is being made of extension of nickel-chromium bars at high temperature to determine whether this is actual growth of the material or simply plastic deformation. Data on the sizes of spools used by the different manufacturers of electrical heater wires has been collected with a view to standardization.

#### Cement, Lime and Gypsum

Committee C-1 on Cement has been devoting its attentions to a study of the testing of cement by means of the fluid cement compression test. Tests have been made of thirty-two brands of cement by forty-seven laboratories. Data have been secured from the viewpoint of time of set, fineness of the cement, consistency and strength developed in the form of the usual standard test specimens and briquets and compression test specimens made from a neat paste containing 42 per cent of water. These data were compared with tests of concrete made by six of the laboratories. The data are still in process of being digested and a report will be forthcoming at the next annual meeting.

Papers on cement presented at the annual meeting include the following: "The Tensile Strength of Portland-Cement Constituents," by Jasper O. Draffin; "Long-Time Tests of High-Magnesia Portland Cements," by P. H. Bates; "Improved Brick Mortars," by Laurence E. Weymouth.

Committee C-7 on Lime has revised its Tentative Methods of Chemical Analysis of Limestone, Quicklime and Hydrated Lime. In addition it has advanced to standard the Tentative Specifications for Quicklime for Use in the Manufacture of Sulfite Pulp, for Hydrated Lime for Use in Water Treatment, for Hydrated Lime for Use in Water Treatment, for Hydrated Lime for Use in Water Treatment, and Methods of Sampling, Inspection, Packing, and Marking of Quicklime and Lime Products. The committee has been giving consideration to specifications for lime plastering.

Committee C-11 on Gypsum has revised its Standard Specifications for Gypsum Plasters, its Specifications for Gypsum Partition Tile or Block and its Methods of Testing Gypsum and Gypsum Products. For several years the committee has been investigating the effect of anhydrite and

gypsum, and mixtures of these materials, as a retarder in portland cement. The Non-Metallic Mineral Station of the Bureau of Mines at New Brunswick, N. J., and several portland cement companies have cooperated in this work. It is now proposed to conduct tests using different types of calcium sulfate including natural anhydrite, artificial anhydrite, soluble anhydrite, plaster of Paris and gypsum.

The committee is at work on specifications for dental impression plaster and for dental model and investment plaster which it plans to submit as tentative at the next meeting. The committee is also investigating the expansion of neat gypsum and several mixes of sanded gypsum.

#### Concrete

The most significant feature of the Society's work in concrete during the year was the holding of a Symposium on Field Control of the Quality of Concrete under the auspices of Committee C-9 on Concrete and Concrete Aggregates. This symposium included papers on proportioning, mixing, conveying and placing, and field testing of concrete. The discussion presented in connection with this symposium proved of considerable value and brought out the need for further work in the development of concrete and the testing of concrete.

Committee C-9 has carried out considerable work on the design of concrete and presented a report on this subject at the annual meeting. The committee also submitted new Methods of Test for Approximate Percentage of Voids in Fine Aggregate, for Approximate Apparent Specific Gravity of Fine Aggregate, and for Surface Moisture in Fine Aggregate. The committee also revised several of the present methods of testing concrete and concrete aggregates. The committee is at work collecting references on all published data concerning admixtures and will endeavor to develop a method for accurately measuring the consistency and workability of concrete. A paper on "The Use of Lumnite Cement in Short-Time Tests to Determine the Quality of Fine Aggregate for Concrete" was presented at the annual meeting by Sanford E. Thompson and Miles N. Clair.

#### Drain Tile

Committee C-6 on Drain Tile has continued the study of the effects of alkali soils and waters on concrete tile. data from two investigations were presented to the committee. One report presented was on the cooperative investigations at University Farm, St. Paul, Minn., which showed (a) that curing concrete in steam at temperatures between 212 and 285° F. materially increased its resistance to injury by alkali waters and (b) that there was so surprising a difference in the durability (in sulfate waters) of similar concretes made with different brands of cement as to indicate the necessity for developing a standard test for portland cement to be used in concrete exposed to the action of sulfate waters. Tests under way with more than thirty brands of cement have given results ranging all the way from complete disintegration at thirty weeks to as high as 90 per cent of normal strength at two years. A preliminary report of a laboratory study of the effects of various admixtures upon the rate and extent of attack of concrete specimens by sulfate solutions was also presented. The admixtures were of two groups, those that would react chemically with the treating solution or the calcium of the cement to form insoluble compounds, and those that were chemically inert.

The Joint Committee on Concrete Culvert Pipe has been quite active during the year in reviewing and revising its specifications for concrete culvert pipe developed during the past few years. Agreement has been reached on all matters concerning revisions except the limits to be established in absorption. In order to secure information with reference to appropriate absorption limits the committee arranged for a series of tests to be made at Ames, Iowa, on samples of concrete from pipe that had passed the strength test. These

absorption tests were completed early in the fall and the results submitted to the committee for its consideration.

#### Brick, Hollow Tile, Refractories

Committee C-10 on Hollow Masonry Building Units, in revising the Standard Specifications for Load-Bearing Wall Tile, enlarged the table of fire resistance periods to include walls having six cells through their thickness. These standards now include requirements for most of the types of hollow tiles commonly used in 8, 12 and 16-in. walls. The Tentative Specifications for Hollow Burned Clay Floor Tile with only minor revisions were adopted as standard during the year.

Committee C-8 on Refractories in addition to submitting revisions of its Standard Method of Test for Softening Point of Fire Clay Brick and of its Tentative Method of Test for Spalling Action, submitted new Tentative Specifications for Clay Fire Brick for Malleable Furnaces with Removable Bungs and for Annealing Ovens, for Clay Fire Brick for Stationary Boiler Service and for Clay Fire Brick for Marine Boiler Service. The committee also submitted a number of definitions of terms relating to refractories. The committee is now engaged in developing a procedure for determining the pyrometric cone equivalent of high temperature refractory cements. Some test procedure is required for determining the general value of such cements as filler, bond, wash or patching material.

Committee C-3 on Brick submitted new specifications for building brick which replace the Standard Specifications for Building Brick. The new specifications are intended to be more generally applicable in practice, and are considered quite an advance in this field. New specifications were also accepted for paving brick although for the time being the existing standard specifications were continued. The test methods have been rewritten and issued as combined methods for testing brick and are intended to cover the testing of all types of brick.

#### Road Materials

In addition to the new paving brick specifications mentioned above, changes in a number of standards dealing with road materials were made on the recommendation of Committee D-4 on Road and Paving Materials. These included changes in a number of tentative specifications covering various types of tar for use in road construction and in repair work. The Standard Method of Mechanical Analysis of Sand was revised to bring the requirements in line with the Society's Standard Specifications for Sieves for Testing Purposes. The Standard Method of Test for Distillation of Bituminous Materials Suitable for Road Construction was withdrawn and the Tentative Method of Distillation continued in revised form. A number of tentative specifications for broken slag and tentative tests for specific gravity and float test were advanced to standard. Two papers of importance dealing with the testing of bituminous road materials were presented at the annual meeting: "The Recovery and Examination of the Asphalt in Asphaltic Paving Mixtures," by John H. Bateman and Charles Delp; "Low-Temperature Ductility of Filler-Grade Asphalt," by W. Furber Smith.

#### Waterproofing Materials

Committee D-8 on Waterproofing and Roofing Materials has now completed most of its program on the preparation of standard specifications for all types of bituminous waterproofing and roofing materials. Eleven of its specifications and methods of test were advanced to standard by the action of the 1927 annual meeting. These, for the most part, cover roofing felts and shingles and pitch for use in constructing built-up roofs. A new method of analysis of roofing felt for fiber composition was submitted as tentative. This was proposed after a number of cooperative tests had been carried out, the results of which were presented by the committee.

The preparation of specifications for bituminous coatings for cold application has been abandoned after years of effort to prepare such specifications. Two tentative specifications that had been submitted a year previously, covering tar for cold application, were withdrawn.

#### Paints and Oils

Of outstanding importance in the work of Committee D-1 on Preservative Coatings for Structural Materials was the adoption as standard of specifications for raw linseed oil. Similar specifications of the Federal Specifications Board have been brought in line with the specifications adopted so that there is now a single standard for raw linseed oil. Similar results are being accomplished in respect to specifications for boiled linseed oil, specifications for which material were accepted as tentative at the last annual meeting.

Many of the tentative specifications under the jurisdiction of the committee were advanced to standard, including specifications for destructively distilled wood turpentine, orange shellae and a number of pigment specifications. The group of specifications relating to pigments has been rounded out by the submission of specifications for seven additional pigments, including aluminum powder and gold bronze powder. A number of the standards under the jurisdiction of the committee were revised, including the methods of routine analysis of pigments. The Sub-Committee on Anti-Fouling Paints presented the results of further tests in arriving at a satisfactory toxic to prevent fouling on vessels.

Methods of analysis and tests for linseed oil for use in connection with the specifications approved last year are being developed. Work is being carried out on methods of analysis of tung oil and a method of test for moisture in tung oil. A large amount of work is being done on methods of analysis and tests for lacquers and lacquer materials to supplement the Tentative Methods of Sampling and Testing Lacquer Solvents and Diluents presented at the last annual meeting.

On the recommendation of Committee D-17 a Method of Test for Determining of Toluol Insoluble Matter in Rosin (Chiefly Sand, Chips, Dirt and Bark) was accepted at the 1927 annual meeting. The committee is now at work on preparing a method for determining viscosity, the term "viscosity" being employed rather than "melting point" as being more appropriate. Work is also being done on the determination of moisture in rosin.

Committee D-2 on Petroleum Products and Lubricants

Committee D-2 on Petroleum Products and Lubricants has developed methods of sampling petroleum products which have been approved as tentative methods and is working on methods for the determination of oil in wax and the dilution of crank-case oil. A number of its methods were advanced to standard during the year including the methods for distillation of gasoline and the methods of test for burning quality of illuminating oils. Several of the tentative and standard methods have been revised.

New sub-committees have been appointed, one on fuel oil and the other to cooperate with the Committee on Revision of the Pharmacopæia of the United States of America with respect to tests for petrolatum and petrolatum liquidum. The Sub-Committee on Color is undertaking the standardization of color scales used in the tentative methods of determining the color of petroleum products.

#### Insulating Materials

The tentative methods of testing electrical insulating oils have been advanced to standard by Committee D-9 on Electrical Insulating Materials to supersede the former standard methods for testing oils. The committee has carried out a considerable amount of work on oils and is continuing its investigation on the life test for transformer oils. The suggested procedure for carrying out the life test has been modified from year to year, the latest modification being published with this year's report. The committee has also

reviewed its several tentative methods of test and important changes in these methods were made, particularly in respect to the methods for testing electrical insulating materials for phase difference and for dielectric strength. A number of revisions were also made in the Standard Methods of Testing Molded Insulating Materials.

The committee is now carrying out considerable work on varnishes, on hot-molded and cold-molded material, on liquid insulation such as the determination of neutralization number and the impact testing of porcelain, and on tests at radio

frequencies.

#### Coal and Coke

Committee D-5 on Coal and Coke combined the Standard Methods of Laboratory Sampling and Analysis of Coke with the Standard Methods of Laboratory Sampling and Analysis of Coal. Methods for the determination of sulfur in the bomb washings following the calorimetric determination, and by sodium peroxide fusion, were carefully investigated and recommended for publication as tentative.

The committee investigated methods of test to determine cubic foot weights and sieve tests of crushed bituminous coal and of coke. Methods for these tests that are under consideration were included in its 1927 report. Data was assembled regarding methods in use to determine the abrasion and breakage of metallurgical coke when rotated in a cylindrical drum (tumbler test). It is proposed to standardize this test as it is used for testing blast furnace coke.

Experimental work was continued on the relation of fusibility of coal ash with clinker formation in boiler furnaces. The committee is also conducting experiments on methods of test for agglutinating value of coal and the interpretation of such tests, also on methods of collecting representative samples of powdered coal from unit pulverizer systems.

Plans were made for conducting comprehensive coal sampling experiments to determine allowable tolerances when two or more samplers independently collect samples from the same shipment of coal. These sampling experiments are to be made at a number of coal consuming centers so as to represent various types of coal.

#### Timber and Shipping Containers

The outstanding feature in the work of Committee D-7 on Timber was the adoption of the Standard Specifications for Structural Wood Joist, Planks, Beams, Stringers and Posts. These specifications were prepared in cooperation with the American Railway Engineering Association and cover quite completely grading and other requirements of all structural timbers. The specifications contain 68 coded specifications for structural timbers to cover all purposes.

The committee has cooperated with the American Railway Engineering Association and the American Wood Preservers Association in respect to timber preservatives and has made revisions in its methods dealing with such preservatives. Its Method of Test for Coke Residue of Creosote Oil has been advanced to standard as well as the Methods for Chemical Analysis of Zinc Chloride. The Methods of Testing Small Clear Specimens of Timber and the Methods of Conducting Static Tests in Timber of Structural Sizes had been continued as tentative for several years. They have now been advanced to standard and have been approved on the recommendation of the Sectional Committee on Methods of Testing Wood as Tentative American Standard by the American Engineering Standards Committee.

The major work which Committee D-10 on Shipping Containers outlined for the past year was that of soliciting the support of the railroads and manufacturers in making a study of containers under actual shipping conditions so as to arrive at a basis for estimating the strength required for containers carrying different classes of commodities. It is expected that this work will be taken up with renewed vigor during the coming year.

#### Fire Tests

At the last annual meeting it was suggested in a paper by F. P. Cartwright and M. E. Dunlap entitled "Standard Fire Tests for Combustible Building Materials" that the Society undertake the standardization of fire tests for combustible materials. This work was referred to Committee C-5 on Fire Tests of Materials and Construction by the Executive Committee and Committee C-5 has started work upon it as described elsewhere in this issue. The committee is also studying the present Tentative American Standard for Fire Tests of Materials and Construction which are also Tentative A.S.T.M. Standards, with a view of determining whether these specifications may now be advanced to the status of standard in the Society and receive approval as American Standard by the A.E.S.C.

#### Rubber and Textiles

While standardization work has continued to receive the attention of Committee D-11 on Rubber Products, the outstanding development in the work of this committee has been the giving of consideration to performance tests. Its standardization activities have resulted in the revision and the proposed revision of several specifications for rubber products such as rubber insulating tape. The committee's specifications for rubber-lined fire hose have also been reviewed by the Sectional Committee on Specifications for Rubber-Lined Fire Hose and substantial agreement has been reached on recommendations to be made to the American Engineering Standards Committee. The trend toward the study of performance tests, however, has been quite important, resulting in the organization of several new sub-committees on abrasion tests, on life tests, on flexing tests and on rubber products for absorbing vibration.

Committee D-13 on Textile Materials has developed its work of standardization so that it now has twelve standard and seven tentative specifications and tests. One important new standard brought out during the year is for the identification of fibers and their quantitative determination in mixed goods. Work under way should lead to a number of new tentative standards in 1928, while work recently initiated on raw cotton may be expected to lead to a tentative standard

in 1929

A new sub-committee on finishing materials used in the textile industries offers opportunity for standard test methods and standard specifications covering a quite wide range of different materials.

The committee in addition to its usual work on standardization of tests, test methods and specifications, has undertaken in a small way some work that is to some extent research of a higher order than the statistical researches

required in the ordinary run of standardization.

Research to determine a working relation of the strength and stretch of knitted fabrics by a test break made on the fabric by the pressure of a ball or plunger on a sample held in special clamping devices has been in process for more than a year. There are many variants to be taken into account in this investigation which may require more time than expected but a tentative report may be expected shortly. An investigation of the relation of strength and elongation of cotton fibers under tensile stress to their spinning qualities has been undertaken but has not passed beyond the preliminary stages, but an active program for 1928 has been outlined which should lead to more or less definite results.

#### Slag and Building Stone

Committee D-16 on Slate is concentrating its efforts on the standardization of tests for absorption, transverse strength, elasticity and electrical insulation as well as upon increasing knowledge regarding slate and its usefulness. Tentative procedures for the first three of these as published in the 1926 Proceedings were submitted to further study and certain revisions made after a series of comparative tests on several varieties of slate by a number of laboratories employing the methods. The data so obtained and published as a part of the committee report for 1927 is of considerable value aside from its intended purpose since it forms a valuable addition to the rather scant amount of physical data on this important product.

A tentative method for determining the electrical insulating value of slate in the laboratory or factory was issued this year and a method suitable for use at the quarry is being devised. Further study of methods for determining the abrasive hardness of slate has indicated that it is desirable to devise a special apparatus for this purpose. The use of slate in floors or stair treads, especially where combined with materials of appreciably different characteristics or degrees of hardness and hence different wearing qualities makes a reliable test for this property especially desirable. The work at the U. S. Bureau of Standards in developing such a test is being followed by the committee with interest.

Announcement was made last year of the program of the newly-organized Committee D-18 on Natural Building Stone, namely, the development of uniform nomenclature, the determination of chemical and physical properties as affecting structural stability, standard methods of determination of thermal properties and fatigue, developments of specification requirements, names and definitions for stone finishes and determination of structural integrity of stone after subjection to fire, preservation and maintenance of old stone structures, and resistance to abrasion under various conditions of use. An active start on compiling existing data has been made, including the compilation of a bibliography. The data will receive the committee's consideration during the coming year.

#### Methods of Testing, Nomenclature

A number of refinements in the testing of materials have been brought out during the year. A particularly valuable test described before the Society is a modification of the ferroxyl test presented by Karl Pitschner in a paper entitled "A Rapid and Practical Method of Applying the Ferroxyl Test to Protective Coatings."

Tests for thin sheet metals have been mentioned in connection with the new specifications for rolled zinc. general subject of testing thin sheet metals is receiving considerable attention. A paper by J. T. Nichols, E. S. Taylerson and J. C. Whetzel entilted "Tension Test Specimens for Sheet Steel" gave results of a very exhaustive study. Similarly, a paper by R. L. Templin entitled "Methods for Determining the Tensile Properties of Thin Sheet Metals" discussed further the testing of thin sheet metals as presented in his paper of a year ago. As a result of these investigations a proposed standard specimen for use in the tension testing of thin sheet metals was developed this year by the Society's Committee E-1 on Methods of Testing and has been incorporated in its Tentative Methods of Tension Testing of Metallic Materials. A paper by H. N. Van Deusen, L. I. Shaw and C. H. Davis entitled "Physical Properties and Methods of Test for Sheet Brass" gives the results of a very extensive investigation on the testing of thin sheet metals with particular reference to the hardness test.

In connection with methods of testing, mention should be made of a paper by J. Hammond Smith entitled "Rate of Elongation in Tension Tests" which describes a very ingenious device for use in determing the elastic limit of metals and of a paper by O. S. Peters entitled "Recent Developments and Applications of the Electric Telemeter." A very interesting instrument and one which will probably prove of much importance in the analysis of materials is the spectrograph described in a paper by F. A. Hull and G. J. Steele entitled "Some Useful Applications of a Quartz Spectrograph."

A paper was presented at the last annual meeting by H. J. French on "Wear Testing of Metals." This opens up a field to which it is hoped considerable attention can be given in the future. Wear testing is such an elusive subject and so difficult a problem that very little progress has been made although wear is of extreme importance, ranking with corrosion as a factor in the destruction of materials.

Considerable progress was made during the year in the standardization of nomenclature and definitions. The results of the work of the Joint Committee on Definitions on Terms Relating to Heat Treatment were presented by Committee A-4 on Heat Treatment of Iron and Steel in a group of definitions of terms relating to heat treatment. A number of terms relating to textile materials was revised and advanced to standard. New definitions for refractory materials were submitted for publication and proposed definitions were offered for magnetic terms. Committee E-8 on Nomenclature and Definitions has continued its activities on the correlation of definitions and advanced some of the definitions under its immediate jurisdiction to standard, including those definitions relating to specific gravity.

The volume and importance of the definitions of the Society has reached a point where a glossary seems essential and work has been started by the committee on the preparation of such a glossary. It is expected that this glossary will appear during the coming year.

#### International Congress for Testing Materials

During the year the first International Congress for Testing Materials since the World War was held at Amsterdam at which the decision was reached to again organize an international association. As announced from time to time in the Bulletin, the Society actively cooperated in arranging the program for the meeting. The Society was officially represented by the junior Vice-President, T. D. Lynch and Past-President W. H. Fulweiler. The presentation of 18 papers by American authors was arranged for, an abstract of each appearing in the November issue of the Bulletin. In each instance provision was made for the presentation of these papers at the Congress, in many cases the paper being presented by the author in person. In all 85 papers comprised the program for the meeting, covering metals, cement and concrete, stone, brick, and miscellaneous materials.

#### Cooperative Relations

Numerous citations appear in the foregoing account of instances of cooperation with other organizations in the work of the Society. To make mention of all of the cooperative activities of the Society in the space available would be impossible. Aside from the cooperation of trade associations in the work of the Society's committees, the Society is represented on a number of joint committees such as the Joint Committee on Boiler Feed Water, on Pattern Equipment Standardization, on Molding Sand Research, on Welded Pressure Vessels, and on a number of advisory committees to the U.S. Bureau of Standards and Federal Specification Board, the work of which cannot be covered in detail here. The activities of the Joint A.S.M.E.-A.S.T.M. Research Committee on Effect of Temperature on the Properties of Metals and of the Joint Committee on Concrete Culvert Pipe have already been mentioned. The Society has cooperated to a very large extent with the American Engineering Standards Committee both through serving as sponsor for sectional committees and in the appointment of representatives on sectional committees for which other organizations are acting as sponsor. The more important work in this line initiated during the year has been the organization of the Sectional Committee on Testing Petroleum Products and Lubricants and of the Sectional Committee on Testing Road Materials. Such cooperative work serves in the ever broadening of the Society's activities, making its committees more representative, thus enabling the Society to serve industry to better advantage.

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## YOUR OWN SPECIFICATIONS

for your laboratory Metallurgical Equipment, they would probably read something like this:

- I. To do the required work it must have
- (a) The best possible optical correction at all powers.
- (b) Plenty of illumination for high magnifications.
- (c) No slipping out of focus during exposures.
  - (d) NO VIBRATION at critical points.
- (e) Rugged construction. Always on the job.
- II. Ease and speed of manipulation.
  - (a) No preliminary lining up.
- (b) Focusing and stage adjusting heads easy to reach.
- (c) Extremely fine adjustment from the ground glass position.
- (d) Scales on everything for quick setting and calculations.

These aren't at all impossible. If you will look over the latest catalog on the

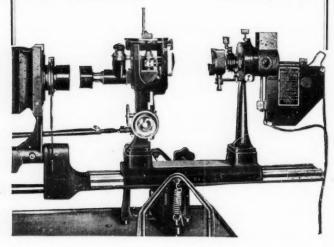
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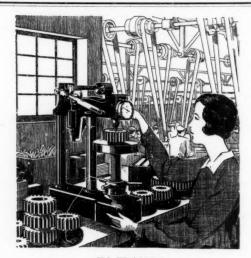
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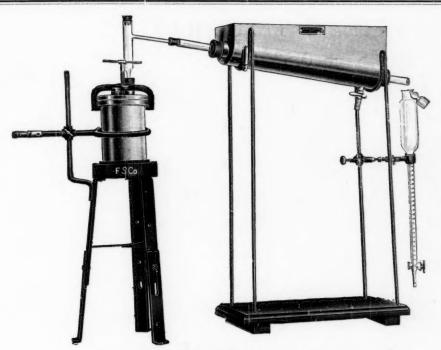
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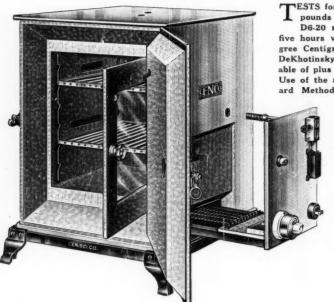
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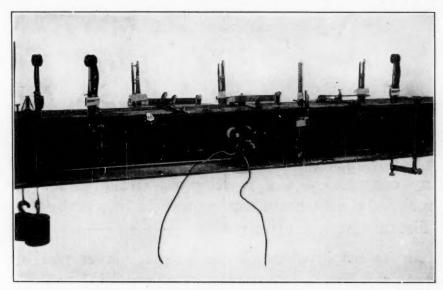
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